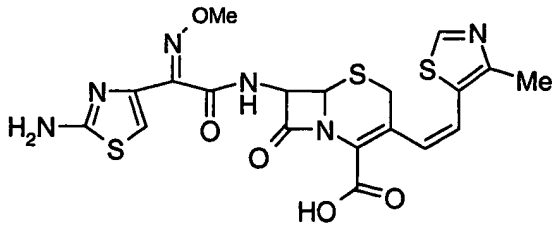
We Claim:

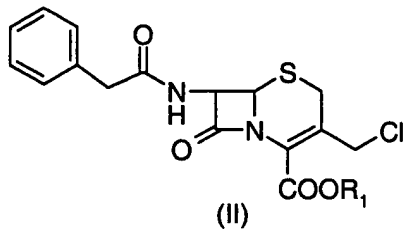
1) A process for the preparation of Cefditoren of formula (I) or its ester or pharmaceutically acceptable salts there of



(I)

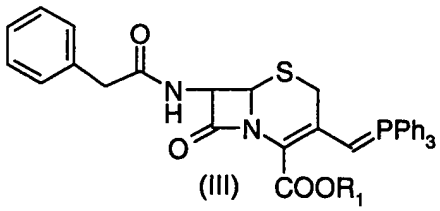
which comprising the steps of:

i) converting the compound of formula (II)



(II)

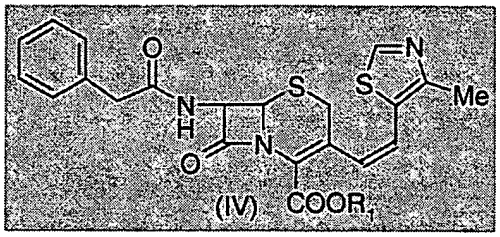
wherein R_1 represents carboxy protecting group to a compound of the formula (III)



(III)

using TPP and alkali iodide in the presence of aprotic solvent, water and base,

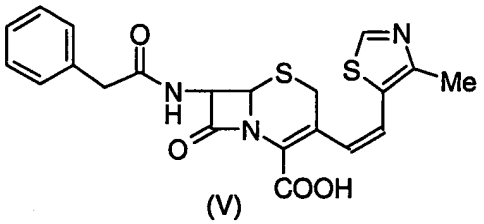
ii) reacting the compound of formula (III) with 4-methyl-5-formyl-thiazole in the presence of aprotic solvent, water and base to produce a compound of formula (IV)



(IV)

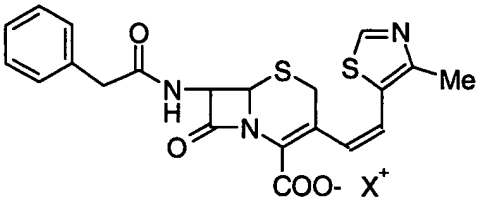
wherein R_1 is as defined above;

iii) deesterifying the carboxy protecting group of compound of the formula (IV) using an acid in the presence of solvent to yield compound of formula (V),



(V)

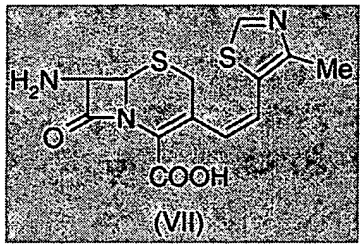
iv) converting the compound of formula (V) to compound of formula (VI)



(VI)

wherein X represents a counter ion which forms a salt, in the presence of a base and solvent;

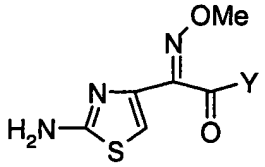
v) converting the compound of formula (VI) into compound of formula (VII)



(VII)

by enzymatic hydrolysis, and

vi) reacting compound of formula (VIII) with compound of formula (VII)



(VIII)

wherein Y is a group which forms a basis that a compound of formula (VIII) is in a reactive form ; including halogen , a group which forms together with the –C=O group to which Y is attached an active thioester , and a group which forms together with the –C=O group to which Y is attached a mixed anhydride in the presence of solvent and in presence or absence of base to produce compound of formula (I)

2) The process as claimed in claim 1, wherein the carboxy protecting group represented by R^1 is selected from (C_1-C_6) alkyl group such as methyl, ethyl, propyl, isopropyl, t-butyl; p-methoxybenzyl, p-nitrobenzyl, o-chlorobenzyl, or diphenylmethyl.

3) The process as claimed in claim 1, the solvent used in step (i) and step (ii) is selected from methylene chloride, ethylene dichloride, acetone, THF, acetonitrile, ethyl methyl ketone, methyl isobutyl ketone, toluene, IPE, hexane, ethyl acetate, hexamethyl phosphoramide, diglyme, monoglyme, 1,4 dioxan, ethylene glycol, DMF, DMAc, trihexyl(tetradecyl)phosphonium hexa fluorophosphate, trihexyl(tetradecyl)phosphonium tetrafluorophosphate; or mixtures thereof.

4) The process as claimed in claim 3 or 1, wherein the solvent used in step (i) & (ii) is selected form mixture of THF and water.

5) The process as claimed in claim 1, wherein the base used in step (i & ii) is selected from sodium bicarbonate, potassium bicarbonate, sodium carbonate, sodium hydroxide, potassium hydroxide, or potassium carbonate.

6) The process as claimed in claim 1, wherein the desertification in step (iii) is carried out using phenol/trifluoroacetic acid, anisole /trifluoroacetic acid, formic acid, PTSA, hydrochloric acid; and the solvent used is selected from MDC, EDC, ethyl acetate, n-butyl acetate, methanol, iso-propanol; water and the like or mixture thereof.

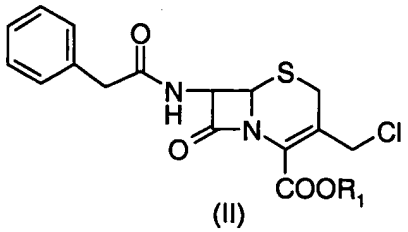
7) The process as claimed in claim 1, wherein the solvent used in step (iv) is selected from water, acetone, DMF, THF, DMAc, DMSO, MDC, EDC, or methanol; and the base employed is sodium hydroxide, lithium hydroxide, potassium hydroxide, ammonia, sodium bicarbonate, potassium bicarbonate, sodium carbonate, potassium carbonate, tertiary butyl amine, benzyl amine, dibenzyl amine, triethylamine, diethyl amine, diisopropyl amine, dicyclohexyl amine, octyl amine, or dicyclohexyl diethanolamine.

8) The process as claimed in claim 1, wherein the enzyme used in step (v) is selected from penicillin G amidase (PGA).

9) The process as claimed in claim 1, wherein the solvent used in step (iv) is selected from methylene chloride, ethylene dichloride, acetone, THF, acetonitrile, ethyl methyl ketone, methyl isobutyl ketone, toluene, IPE, hexane, ethyl acetate, water, ethylene glycol, DMF, DMAc, methanol, cyclohexane or mixtures thereof.

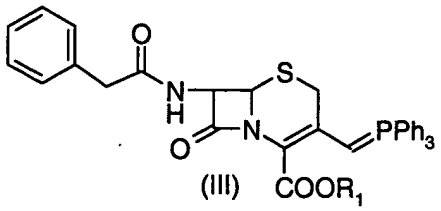
10) A process for the preparation of Cefditoren or its ester or pharmaceutically acceptable salts there of, which comprising the steps of:

i) converting the compound of formula (II)



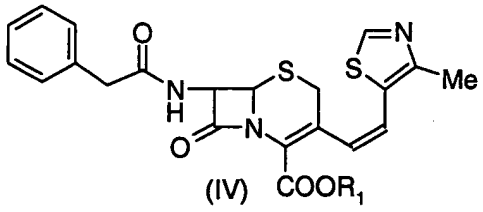
(II)

wherein R_1 represents carboxy protecting group to a compound of the formula (III)



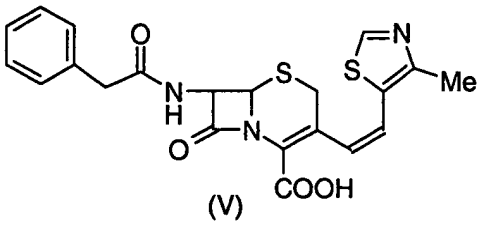
using TPP and sodium iodide in the presence of THF, water, and base,

ii) reacting the compound of formula (III) with 4-methyl-5-formyl-thiazole in the presence of THF, water and base to produce a compound of formula (IV)

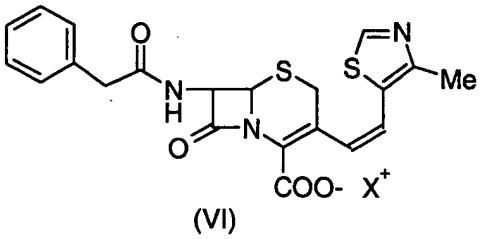


wherein R_1 is as defined above,

ii) deesterifying the carboxy protecting group of compound of the formula (IV) using phenol/trifluoroacetic acid in the presence of solvent to yield compound of formula (V),

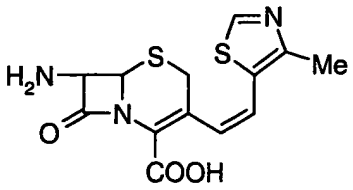


iii) converting the compound of formula (V) to compound of formula (VI)



wherein X represents a counter ion which forms a salt in the presence of a base and solvent,

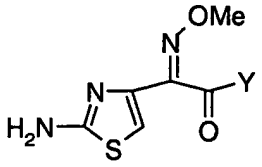
iv) converting the compound of formula (VI) into compound of formula (VII)



(VII)

by enzymatic hydrolysis, and

v) reacting compound of formula (VIII) with compound of formula (VII)



(VIII)

where in Y is as defined above

in the presence of solvent and base to produce compound of formula (I)

11) The process according to claim 1 or 10, further comprising converting the compound of formula (I) to its pharmaceutically acceptable salt or ester by conventional methods.